NIKOLA TESLA'S AETHER-POWERED CAR

In the northern summer of 1931, Dr Nikola Tesla road-tested a luxury Pierce-Arrow sedan fitted with an 1800 rpm AC electric motor and powered by a receiver tuned to tap energy from the aether.

by Igor Spajic © 2004

c/- NEXUS Magazine
PO Box 30
Mapleton, Qld 4560
Australia
Email: editor@nexusmagazine.com

The city of Buffalo, in the north of New York State, USA, bore silent witness to an extraordinary event one week in the (northern) summer of 1931. The economic Depression had dampened business and manufacturing to some extent, but the city was nevertheless a hubbub of activity. Among the thousands of vehicles travelling the streets of the city one day, a luxury car stopped by the kerb at a traffic light intersection. A pedestrian noticed that the car was a new Pierce-Arrow sedan, with headlight housings blending into gracefully swept front fenders in the unique Pierce-Arrow style. What also set the elegant car apart was that on this cold day, there was no visible vapour belching from the exhaust pipe. The bystander approached the driver and through the open window commented on the lack of fumes coming from the exhaust. The driver acknowledged the man's compliment and remarked that it was because the car had "no engine".

This statement is not as whimsical or mischievous as it may seem. There was some truth to it. The Pierce-Arrow did indeed have no internal combustion engine. It had an electric motor instead. If the driver had cared to expand his comment further, he might have told the pedestrian that the electric motor ran with no batteries—with no "fuel" of any kind.

The driver was Petar Savo, and though he was operating the car he was not responsible for its astonishing features. These were the work of his sole passenger, a man whom Petar Savo knew as an "uncle": none other than the electrical genius Dr Nikola Tesla (1856–1943).

In the 1890s, Nikola Tesla revolutionised the world with his inventions in practical electricity, giving us the induction electric motor, alternating current (AC), radio telegraphy, wireless remote control, fluorescent lamps and other scientific marvels. It was Nikola Tesla's polyphase current (AC), not Thomas Edison's direct current (DC), that really ushered in the modern technological age.

Tesla did not rest on his laurels but continued to make fundamental discoveries in the fields of energy and matter. He discovered cosmic rays decades before Millikan, and was an early developer of X-ray, cathode ray and other vacuum tubes.

However, Nikola Tesla's potentially most significant discovery was that electrical energy could be made to propagate through the Earth and also around the Earth in an atmospheric zone called the Schumann cavity. It extends from the planetary surface to the ionosphere at about 50 miles (80 kilometres) altitude. Electromagnetic waves of extremely low frequencies in the range of 8 Hz (the Schumann resonance or pulse of the Earth's magnetic field) *travel with virtually no loss, to any point on the planet.* Tesla's system of power distribution and his dedication to free energy meant that his system could be tapped by anyone in the world with the right electrical device correctly tuned to the power transmission.

This threat to powerful interests and their distribution and sale of electrical power was too great. Tesla's discovery resulted in the withdrawal of financial backing, ostracism from the scientific mainstream and the gradual removal of his name from the history books. Having had the status of a scientific superstar in 1895, Tesla was virtually a "non-person" by 1917, limited to performing small-scale scientific experiments in virtual seclusion. A thin figure in his open coat of pre–World War I style, he would announce his discoveries and developing ideas to journalists during his annual birthday briefings for the press. It was a sad mixture of ego and frustrated genius.

In 1931, Nikola Tesla turned seventy-five. In a rare display of media tribute, *Time*

magazine honoured him with a cover portrait and biographical profile. The elderly scientist/engineer was gaunt though not unhealthy, his hair still a shining black, and he had the same far-away look in his visionary eyes.

Electric Cars Fall Behind

At the beginning of the 20th century, the prospects for the electric automobile were bright. Visionaries like Jules Verne had anticipated battery-powered vehicles that were mechanically simple, silent, odourless, straightforward to operate and less cantankerous than any gasoline-engined car.

In the petrol-engined automobile, one had to pre-set the throttle linkage, advance the spark control, pump the accelerator and rotate the engine with a crank. In an electric car, one only needed to turn a key and press the accelerator. Releasing the accelerator slowed down the car immediately.

In an age of few motor garages, electricians could service the simple DC motors if necessary. There was no oil to change, no radiator to fill, no fuel or water pumps to service, no carburettor problems, no exhaust pipe to rust, no clutch or transmission to service, and no pollution! Grease and oil use was limited to two bearings in the electric motor and a number of chassis fittings.

Department stores made use of electric delivery trucks. Doctors began making house calls in "electrics", discarding their horse and buggy for something altogether easier to maintain. Women took to electric cars for their ease of operation. Since electric cars were limited in their range and speed by their batteries, they became popular as town carriages.

Outside of town, the country roads of America were so primitive that they became the preserve of the rapid (and rapidly improving), long-range, internal combustion engine car. Thus, a sort of golden age of electric vehicles persisted in America after the rest of the world had begun to discard them. Detroit Electric, Columbia, Baker, Rauch & Lang, and Woods were the most significant among a host of manufacturers of this type of vehicle. They flourished in their market niche with a range of formal, often elegant, closed-carriage designs.

The Achilles heel of the electric automobile, however, was always the energy density of its batteries, or the lack of it. Batteries were of the lead-acid type, and were heavy and bulky and took up valuable storage space. The excessive weight made for lumbering handling and sluggish performance, even by the standards of the day. Electric vehicles could not exceed 45–50 mph (70–80 km/h), as such speed might destroy the batteries in mere moments. Bursts of speed to 35 mph (57 km/h) could be sustained for only a very short duration, and travel in the 15–20 mph (24–32 km/h) range was typical. The batteries required charging every night and the range of travel was seldom over 100 miles (162 kilometres). No electric vehicle manufacturer had ever installed a DC generator, which would have returned a small charge back into the batteries as the vehicle moved, thus increasing operating range. Promises of coming breakthroughs in new, powerful batteries were made as far back as Edison's heyday but ultimately came to naught.

Department stores made use of electric delivery trucks. Doctors began making house calls in "electrics". Women took to electric cars for their ease of operation.

As the speed and reliability of petrol-engined cars improved, the electric car fell out of favour, becoming associated with retired gentlemen and little old ladies. The electric starter on conventional cars put the final nail in the coffin of electric vehicles.

Enter Dr Nikola Tesla

In the 1960s an aeronautical engineer named Derek Ahlers met Petar Savo and developed a long friendship with him. Savo would talk with Ahlers during their 10-year acquaintance about his illustrious "uncle" Nikola Tesla and his exploits in the 1930s. (Savo was a younger relation of Nikola Tesla and if not actually a nephew he would customarily refer to him as "uncle").

In 1930, Nikola Tesla asked his "nephew" Petar Savo to come to New York City. Savo (born in Yugoslavia in 1899 and thus 43 years younger than Tesla) had been in the Austrian military and was a trained aviator, and he eagerly took up the opportunity to leave Yugoslavia (also Tesla's country of birth). He moved to America and settled in New York City.

A 1931 Pierce-Arrow Eight sedan, similar to the Tesla electric test car.
(Photo courtesy of John Filiss, *Serious Wheels*)

In a series of interviews in 1967, Mr Savo related his part in the affair of the Tesla electric car.

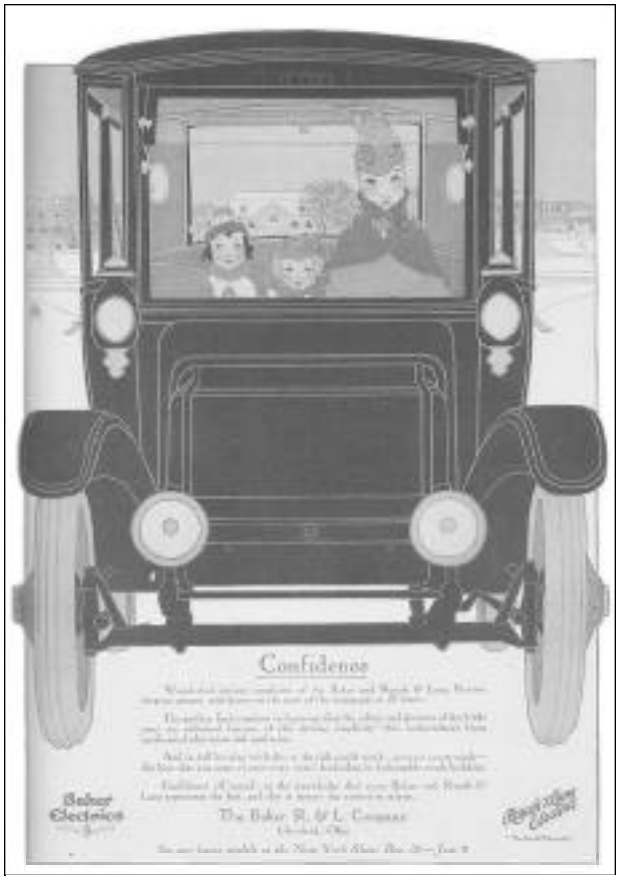
During the summer of 1931, Tesla invited Savo to Buffalo, New York state, to unveil and test a new type of automobile which Tesla had developed with his own funds. Coincidentally, Buffalo is close to Niagara Falls—where Tesla's AC hydroelectric power station went on line in 1895, marking the pinnacle of his esteem in the eyes of orthodox science. Westinghouse Electric and the Pierce-Arrow Motor Car Company had prepared this experimental electric car under Dr Tesla's guidance. (George Westinghouse had bought Tesla's AC-current patents for US$15 million at the turn of the 20th century.)

The Pierce-Arrow Company was now owned and bankrolled by the Studebaker Corporation and used this firmer financial footing for a burst of innovation. Between 1928 and 1933, the company released new models with straight-eight-cylinder and V-12 engines, the futuristic Silver Arrow show cars, new styling and improvements in engineering. Customers responded and Pierce-Arrow sales even improved the company's share of the diminishing luxury car market in 1930. In such a surge of confidence, "blue sky" projects such as Tesla's electric car were within the conceptual sphere. With the company's traditional mixture of arrogance and naïvety, anything seemed possible.

Thus, a 1931 Pierce-Arrow Eight had been selected for testing from the factory's proving grounds in Buffalo, New York. Its internal combustion engine had been removed, leaving the clutch, gearbox and transmission to the rear wheels intact. The ordinary 12-volt storage battery remained, but an 80-hp electric motor had been coupled to the transmission.

Traditionally, electric cars had battery-powered DC motors, as DC is the only type of current that batteries can provide. A DC to AC converter could have been used, but the equipment was too large in those days to fit into an automobile.

The twilight of electric cars had long since passed, but this Pierce-Arrow was fitted with no simple DC motor. It was an AC electric motor designed for 1800 rpm. The motor itself was 40 inches long and 30 inches in diameter (102 x 76 cm), was brushless and air-cooled with a front cooling fan, and displayed twin power cable leads which were directed to underneath the dashboard but left unconnected. Tesla would not say who had manufactured the electric motor, but it is thought that it was possibly one of the divisions of Westinghouse. An antenna rod of 6 feet (1.83 m) in length had been fitted to the rear of the car.



Advertisements for Baker and Rauch & Lang electric cars, circa 1915, advocated their comfort and reliability as ideal for a woman's car. Note the merger of two electric carmakers by this time: Baker, and Rauch & Lang. Each retained its own slogan: Baker ("Quality, Service" and Rauch & Lang ("The Social Necessity").

The "Aether-Arrow" Affair

Petar Savo joined his famous elder relative as requested, and they boarded a train in New York City for upstate New York. During the journey, the inventor would not elaborate on the nature of the experiment.

Upon arrival in Buffalo, they went to a small garage where they found the new Pierce-Arrow. Dr Tesla opened the hood and made a few adjustments to the AC electric motor within. They then departed to prepare Tesla's equipment. In a nearby hotel room, the electrical genius assembled his apparatus. He had brought 12 special vacuum tubes in a boxlike case. The tubes were described by Savo as "of curious construction", though at least three have since been identified as 70L7-GT rectifier beam tubes. They were plugged into a device that was housed in a box, 2 feet long, 1 foot wide and 6 inches high (61 x 30.5 x 15 cm). It was no larger than a shortwave radio cabinet. Within was his electronic circuit comprising the 12 vacuum tubes, wire and assorted resistors. Two rods of a quarter-inch diameter and three inches in length (0.6 x 7.6 cm) apparently served as connectors to the motor leads.

When they returned to the test car, they placed the box in a pre-fitted position on the passenger side under the dashboard. Dr Tesla pushed in the two contact rods and consulted a voltmeter.

"We now have power," he declared, handing the ignition keys to his nephew. There were additional gauges on the dashboard that read values which Tesla would not explain.

At his uncle's request, Savo started the engine. "The engine is now in motion," affirmed Tesla. Savo heard no sound. Nevertheless, with the electrical savant in the passenger seat, Savo selected a gear, pressed the accelerator pedal and drove the car out.

Petar Savo drove this fuelless car for a long time that day, for 50 miles through Buffalo and out into the countryside. With a speedometer calibrated to 120 mph (192 km/h), the Pierce-Arrow was taken up to 90 mph (145 km/h), still with the same degree of silence from the motor.

Dr Tesla became more relaxed and confident about his invention as they drove through the countryside. He began to open up to his nephew regarding its secrets. The device was capable of supplying the vehicle's power needs forever, but, more than this, it was also capable of meeting the power requirements of a house—and with power to spare.

Initially reluctant to explain the principles, Dr Tesla did admit that his device was merely a receiver for a "mysterious radiation, which comes out of the aether" and which "is available in limitless quantities".

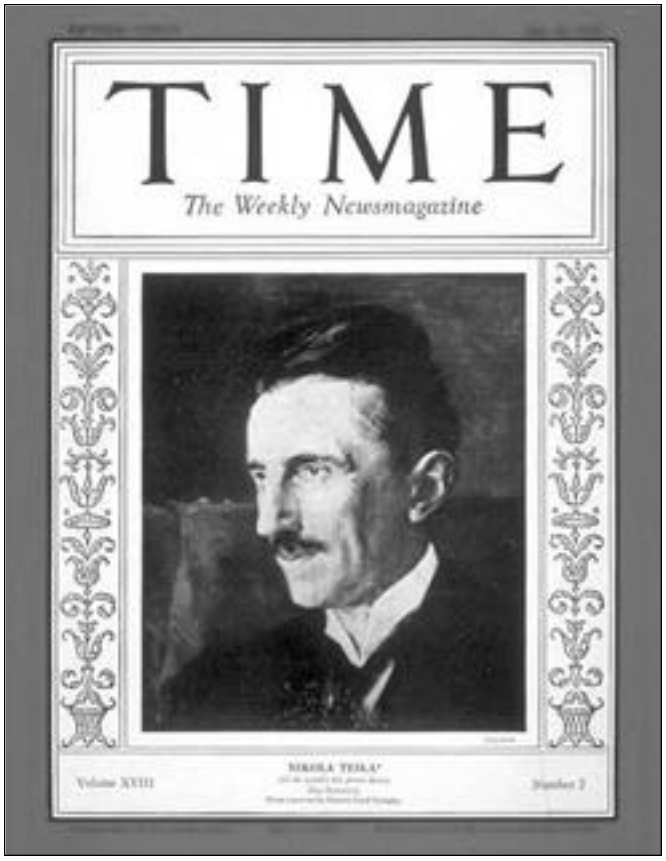
"Mankind should be very grateful for its presence," he mused.

Over the course of the next eight days, Tesla and Savo tested the Pierce-Arrow in city and country conditions, from crawling speed to 90 mph. Performance was equal to any powerful, multi-cylinder car of the day, including Pierce's own 366-cubic-inch (6- litre), 125-bhp Eight.

Tesla told Savo that the energy receiver would soon be used to power trains, boats, planes and automobiles.

The inventor and his accomplice finally delivered the car to a secret, pre-arranged location—an old barn near a farmhouse 20 miles from Buffalo. They left the car there, Dr Tesla taking the ignition key and his receiver device with him.

This cloak-and-dagger aspect of the affair continued. Petar Savo heard a rumour that a secretary had spoken openly about the secret tests and had been fired for the indiscretion. This may explain how a garbled account of the tests came to appear in several newspapers.



Dr Nikola Tesla was featured on the cover of the 20 July 1931 issue of *TIME* magazine (vol. XVIII, no. 3). The portrait was painted by Princess Vilma Lwoff-Parlaghy and first exhibited in March 1916. (Photo courtesy of *Time-Life*)

Dr Tesla was asked where the power came from, in the obvious absence of batteries. "From the aethers all around us," he replied reluctantly.

Some people suggested that Tesla was mad and somehow in league with sinister, occult forces. Tesla was incensed. He removed his mysterious box and himself, returning to his New York City laboratory. So ended Nikola Tesla's brief foray into automotive applications.

This security breach incident may be apocryphal, as Tesla was not averse to using publicity to promote his inventions and ideas, although when these devices threatened the industrial status quo he had every reason to be circumspect in his dealings.

The Pierce-Arrow Company had already reached the pinnacle of its success in 1930. In 1931, it was on the way down. In 1932, the Company lost US$3 million. In 1933, the writing was also on the wall for parent company Studebaker, which teetered on the very brink of liquidation. The focus moved from innovation to mere survival, and here Pierce-Arrow leaves our narrative.

A Mystery within an Enigma

About a month after the publicity incident, Petar Savo was phoned by Lee DeForest, a friend of Tesla and a pioneer developer of the vacuum tube. He asked Savo how he had enjoyed the tests. Savo responded enthusiastically and DeForest praised Tesla as the greatest living scientist in the world.

Later, Mr Savo asked his "uncle" about the progress of the power receiver in other applications. Dr Tesla replied that he was negotiating with a major shipbuilding company to build a boat with a similar arrangement to the electric test car. He would not be pressed further for details, however, as he was hypersensitive regarding the security of his device—and with good reason. Powerful interests, who sought to stymie his every effort to promote and apply his technologies, had blackballed Tesla in the past.

This author is unaware of any known public record of the nautical experiment, or if it took place at all. Scant information made it into the public arena.

The *New York Daily News*, on 2 April 1934, ran an article entitled "Tesla's Wireless Power Dream Nears Reality", which described a "planned test run of a motor car using wireless transmission of electrical energy" for power. This was after the event and made no mention of "free energy".

At the time that the car might have been unveiled, the Westinghouse Corporation, under president F. A. Merrick, paid for Tesla's accommodation at New York's newest and most luxurious hotel, the New Yorker. There, the ageing scientist lived rent free for the rest of his life. Tesla was also hired by Westinghouse for some unspecified wireless research and he stopped his public statements on cosmic rays.

Did Westinghouse buy Tesla's reluctant silence on his free-energy discoveries? Or was he funded to pursue secret projects that were so speculative that they would be of no possible threat to established industry for the foreseeable future? The curtain drops on a mystery within an enigma. ∞

About the Author:

Igor Spajic bought his first copy of NEXUS because of an article on Nikola Tesla, and maintains an interest in the technology and history of the inventor. As a graphic designer, he has contributed illustrations to magazines and designed cartoon characters for a school musical education program. Igor is currently restoring a classic car, though he does not anticipate powering it with cosmic energy. Igor Spajic is preparing a follow-up article speculating on how Dr Nikola Tesla harnessed the energy of the Earth's magnetic field to power his car.

References

• Abram, Arthur, "The Forgotten Art of Electric-Powered Automobiles", *The Cormorant*, the Packard Club's newsletter (date unknown)
• Derek Ahlers interview with Petar Savo, 16 September 1967 (from archives of Ralph Bergstrasser)
• Childress, David H., *The Fantastic Inventions of Nikola Tesla*, Adventures Unlimited Press, Illinois, 1993, ISBN 1-932813-19-4
• Childress, David H. (ed.), *The Tesla Papers*, Adventures Unlimited Press, Illinois, 2000, ISBN 0-932813-86-0
• Decker, Jerry, "Tesla's Electric Car – The Moray Version", KeelyNet BBS, posted 31 January 1993
• *Extraordinary Technology*, vol. 1, no. 2, April/May/June 2003
• Greene, A.C., "The Electric Auto That Almost Triumphed", *Dallas Morning News*, January 24, 1993
• Nieper, Hans A., *Revolution in Technology, Medicine and Society*, MIT Verlag, Oldenburg, 1985, ISBN 3-925188-07-X (first published in German as *Revolution in Technik, Medizin, Gesellschaft*, 1981)
• Siefer, Marc J., *Wizard: The Life and Times of Nikola Tesla*, Birch Lane Press/Carol Publishing Group, NJ, 1996, ISBN 1-55972-329-7
• Seife, C., "Running on Empty", *New Scientist*, 25 April 1998
• Southward Car Museum Trust Inc., *The Illustrated Motor Vehicle Collection*, Paraparaumu, New Zealand, ISBN 0-473-05583-X
• TFC Books FAQ, http://www.tfcbooks.com/teslafaq
• Vassilatos, Gerry, "Tesla's Electric Car", KeelyNet BBS
• Vassilatos, Gerry, *Secrets of Cold War Technology – Project HAARP and Beyond*, Borderland Sciences Research Foundation, 1996, ISBN 0-945685-20-3
• Wiegersma, Friso, *La Belle Chauffeuse*, VOC Angel Books, Amsterdam, 1981, ISBN 90-6560-081-7